Space Weather Forecast

Issued on Thursday, 11 July 2024 at 13:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Moderate-class flares expected. Chance of G1 Minor Storms mainly day 3 (13 Jul)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High with five Moderate- class flares observed, all from the large region in the south centre disc. This is largest and most complex of the nine sunspot regions on the disc, and despite some recent simplification of its magnetic structure, has seen ongoing slow growth with further small spots emerging within it. The other regions are all smaller and simpler, with the most complex being in the southeast, however this maintains a simple bipolar structure.

No Earth-directed coronal mass ejections (CMEs) occurred, however a CME was observed from off the far-side of the Sun, heading away from Earth.

Solar Wind / Geomagnetic Activity: Slow wind conditions dominated with observed solar wind speeds easing from near 400km/s to be at background around 350-380km/s. Interplanetary Magnetic Field was weak with the north-south component, varying weakly. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at Low to Moderate levels, with a slight chance of becoming High from any isolated strong flares, which are most likely to originate from the large, centre-disc sunspot region.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Slow wind conditions are expected at first, with a chance of a slight enhancement from the arrival of any faster solar winds from the southwestern coronal holes day 1 into day 2 (11-12 Jul). A more notable enhancement is then likely on day 3, peaking later in the day or early day 4 (Jul 13-14), due to the onset of the fast winds of a more notable coronal hole in the northwestern disc. Mainly Quiet geomagnetic activity is expected with Unsettled intervals. Any fast wind enhancement will bring a likelihood of an Active spell, with isolated G1 Minor Storm intervals. These most likely on day 3 (13 Jul).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring. However, there is a chance of the count rate rising in response to any notable solar flares from the large sunspot region in the southern centre disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	70	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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